Misregulation of AUXIN RESPONSE FACTOR 8 Underlies the Developmental Abnormalities Caused by Three Distinct Viral Silencing Suppressors in Arabidopsis

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Résumé en anglais	In the plant and animal RNA silencing pathways, small RNA molecules known as micro (mi)RNA and short-interfering (si)RNAs have key roles in development and antiviral defense, respectively. In turn, viruses counteract this defense by deploying specific virulence factors, referred to as Viral Suppressors of RNA silencing (VSRs), which target distinct steps of the host silencing machinery. In the model plant species Arabidopsis thaliana, transgenic expression of distinct VSRs often incurs a set of strikingly recurrent developmental anomalies that resemble those triggered by viral infections. While these defects have been assumed to result from a general interference of VSRs with silencing-based mechanisms controlling cellular growth, their exact molecular basis has remained largely elusive. Here, we address this issue by demonstrating that misregulation of a single transcript encoding the AUXIN RESPONSE FACTOR 8, a target of miR167, underlies most, if not all, of the defects caused by VSR expression, both in transgenic and in an authentic infection context. Our study also highlights the value of VSRs as generic tools for the discovery or validation of endogenous RNA silencing targets. These results also have implications for our understanding of small RNA-based regulations in plants, and shed light on the possible origin of some of the symptoms elicited by viral diseases.
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